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Socratic Method and Therapist Adherence as Predictors of Symptom Change in
Cognitive Therapy for Depression: A Study of Therapists in Training

Honors Research Thesis

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Therapist Adherence and Socratic Questioning as Predictors of Symptom Change in Cognitive Therapy for Depression: A Study of Therapists in Training

Cognitive Therapy (CT) for depression is a form of psychotherapy that has strong evidence for its efficacy and promising evidence for its effectiveness (Dobson, 1989; Strunk & DeRubeis, 2001; Gibbons et al., 2010). In clinical trials, CT yields response rates superior to pill placebo condition and comparable to antidepressant medication (ADM; DeRubeis, Gelfand, Tang, & Simons, 1999; DeRubeis et al., 2005). Nonetheless, the mechanisms of symptom change in CT remain unclear (Garraat et al., 2007). An improved understanding of the mechanisms of change in CT is needed as such efforts may facilitate efforts to disseminate or refine this treatment.

Although a substantial number of studies have evaluated CT as a complete treatment package, there are a limited number of studies that have attempted to examine the efficacy of specific aspects of CT (Longmore & Worrell, 2007). Identifying the aspects of CT that are responsible for its efficacy is important because previous research comparing the relative effectiveness of CT for depression against other forms of treatment have yielded discrepant results, in which differences in the implementation of CT were the purported cause (Elkin et al., 1989; DeRubeis et al., 2005). Therefore, studies that yielded discrepant results in which CT for depression was shown to be either superior or inferior to other treatments may have utilized different combinations of inactive versus active mechanisms of change across studies. The identification of these active mechanisms would allow CT to yield more reliable positive therapeutic outcomes in the treatment of depression.

For example, in the Treatment of Depression Collaborative Research Program study (TDCRP) site differences in the implementation of CT seem to have played a strong role in the

relative effectiveness of CT across conditions (Elkin et al., 1989). The study compared CT, interpersonal psychotherapy (IPT), imipramine plus clinical management (an antidepressant medication; IMI-CM), and placebo plus clinical management (PLA-CM) across three sites. Although the initial findings did not show large differences in post-treatment outcomes between the types of therapy, a secondary analysis which used random regression models (RRMs; a more powerful statistical procedure) found IPT and IMI to have greater significant efficacy compared to the pill placebo condition for severely depressed patients, while CBT was no more efficacious (Elkin et al., 1989; 1995). However, these results were not consistent across sites; in fact, Elkin et al. (1989) explained that at one of the sites, CT did very well and had scores very similar to those for patients in the IMI condition.

Although the principle investigators of the TDCRP never released which results corresponded to which sites, it is important to note that one of the sites holds a strong CT focus, while another is home to some of the first research conducted on IPT (Jacobson & Hollon, 1996). Consequently, it is possible that treatments were better implemented at sites where that particular treatment is a focus (Jacobson & Hollon), which may explain the variable results. If in fact the CT-focused site was where CT did equally well compared to pharmacotherapy, the possibility remains that those with lesser-expertise in CT at the two remaining sites, may have not adequately implemented CT.

Although the majority of research evaluating the efficacy of CT focus on the treatment as a whole (Longmore & Worrell, 2007), several studies have focused on examining the efficacy of specific aspects of CT for depression (DeRubeis & Feeley, 1990; Feeley, DeRubeis, & Gelfand, 1999; Strunk, Brotman, & DeRubeis, 2010; Strunk, Cooper, Ryan, DeRubeis, & Hollon, 2011). These studies utilized a process-outcome approach by examining the degree to which individual

therapeutic process variables relate to symptom change, allowing the identification of candidate mechanisms by which CT for depression may cause symptom change. An important process variable is therapist adherence, or the degree to which a therapist utilizes the different theory-specified techniques of a manualized treatment (Feeley et al., 1999). In this series of CT process-outcome studies, a subset of the Collaborative Study Psychotherapy Rating Scale (CSPRS) items, which was originally designed to differentiate therapy sessions in interpersonal therapy, CT, and clinical management for pharmacotherapy were used to assess therapist adherence (Hollon et al., 1988). A recent factor analysis conducted by Strunk et al. (2011) on these CSPRS items identified three important dimensions of therapist adherence in cognitive therapy, including: Cognitive Methods, Negotiating/Structuring Activities, and Behavioral Methods/Homework. Therapist adherence to the Cognitive Methods factor refers to the therapist's efforts to identify and evaluate the accuracy of a client's negative thought patterns, which includes the use of thought records. Therapist adherence to the Negotiating/Structuring Activities factor refers to the degree to which the therapist encourages a collaborative effort to structuring therapy content, therapy pace, and time allocation to each agreed upon topic. Therapist adherence to the Behavioral Methods/Homework factor refers therapist efforts to review and assign homework as well as implement behaviorally-oriented strategies such as aiding the client in using a daily activity log, increasing pleasure and mastery, and scheduling or structuring activities.

The current study sought to expand upon previous research by examining the process-outcome relationship of the three dimensions of therapist adherence to CT in a sample of therapists in training. Additionally, the marked variability in therapeutic outcome observed in previous CT efficacy research raises the possibility that differences in the implementation of CT

are driving differences across sites and studies. Although there are likely several explanations acting conjunctively that may have contributed to the differences in the implementation of CT in previous research, a review of the literature reveals that the Socratic method, a process thought to underlie cognitive change in CT, is widely believed to be one of the more difficult techniques for novice therapists to master (Beck, 1979; IAPT, 2007; Overholser, 1991). Hence, differences in the implementation of CT may stem from differences in the implementation of the Socratic method as a function of varying levels of therapist expertise in CT. Therefore, the major focus of this study was to examine the Socratic method as a predictor of symptom change among therapists in training. Another focus was to compare expert and novice adherence to the Socratic method. In general terms, the Socratic method refers to a graded series of questions by which the therapist highlights the importance of a client's negative automatic thought patterns and examines their validity (Beck, 1979; Overholser, 1993a; 1993b). However, in order to lay the groundwork for the present study, it is necessary to understand the results, implications, and limitations of previous CT process-outcome research.

CT Process Research

In their meta-analytic review of psychotherapy process research, Webb, DeRubeis, and Barber (2010) explain an important limitation of previous process-outcome literature. These studies often related measurements of therapist adherence in the acute phase of treatment to post-treatment outcome. Although this technique can identify a relationship between the variables of adherence and outcome, it does not establish temporal precedence of therapist adherence occurring before the predicted symptom change or outcome (Feeley et al., 1999). Therefore, such an association might arise because adherence to certain methods of a treatment affected subsequent symptom change or due to prior symptom change affecting the methods to which a

therapist later adhered. Overall, it is important that future researchers carefully consider how they might best minimize this limitation in their own work.

In the study of CT for depression, four process-outcome studies have examined process measures as predictors of subsequent symptom change with two examining immediate (i.e., session-to-session) changes specifically (DeRubeis & Feeley, 1990; Feeley et al., 1999; Strunk et al., 2010; Strunk et al., 2011). In the first of these studies, DeRubeis and Feeley (1990) showed that aspects of adherence (but not the alliance) were related to subsequent symptom change, and therefore set the stage for future process-outcome research specific to CT. As previously mentioned the study used the subset of the CSPRS items to assess therapist adherence (Hollon et al., 1988). The study examined two dimensions of adherence, including CT-Concrete and CT-Abstract factors. The CT-Concrete adherence factors pertain to a subset of symptom-focused behaviors of CT, such as reviewing homework, examining evidence concerning beliefs, and the use of thought records. The CT-Abstract adherence factor pertains more to the structural aspects of CT, such as encouraging independence and negotiating therapy content. Overall, the CT-Concrete adherence items measured at session 2 were predictive of symptom change over the course of treatment, but therapist adherence to the CT-Concrete items measured at randomly selected sessions during each of the additional time intervals (weeks 4-6, 7-9, and 10-12) were not significantly predictive. The CT-Abstract adherence items were not predictive of symptom change at any session. Also, contrary to previous belief, the Therapeutic Alliance factor was predicted by prior symptom change, and was not a significant predictor of subsequent symptom change. In an attempt to replicate the results found by DeRubeis and Feeley (1990), Feeley et al. (1999) found that the CT-Concrete adherence items at session 2 were the only significant

predictor of symptom change, and that previous symptom change only predicted the therapeutic alliance at a trend level.

The third CT process-outcome study in the series, conducted by Strunk et al. (2010), aimed to examine the process-outcome relationship during a specific time period by assessing adherence on a session-to-session basis early in treatment (sessions 1-4), with symptom change measured at each subsequent session. An advantage of this method is that therapist adherence and outcome are measured on a one-to-one basis, rather than allowing additional therapy sessions to occur between the measurement of adherence and outcome (Webb et al., 2010). An additional advantage is that the rate and degree of symptom change tends to be the greatest in early sessions (Tang & DeRubeis, 1999; Kelly, Roberts, & Ciesla, 2005; Tang et al. 2005). Consequently, the relationships between the adherence factors and outcome are likely to be evident in the early sessions if the hypothesized causal effects are truly occurring.

In light of the limitations of previous factor analyses, Strunk et al. (2010) utilized a more recent factor analysis, which identified the aforementioned dimensions of therapist adherence, including: Cognitive Methods, Negotiating/Structuring Activities, and Behavioral Methods/Homework (Strunk et al., 2011). In addition to the adherence factors, the Therapeutic Alliance was also measured. The results indicate that adherence to Cognitive Methods was the strongest predictor of subsequent symptom change, while Negotiating/Structuring Activities was also a significant predictor. Finally, Therapeutic Alliance was not a significant predictor of subsequent symptom change, which is consistent with the results of previous CT process-outcome research (DeRubeis & Feeley, 1990; Feeley et al., 1999).

The final study in this series, conducted by Strunk et al. (2011), used a similar design to the previous study by measuring adherence and outcome on a session-to-session basis for the

first 3 sessions, and utilized the same factor structure (Strunk et al., 2010). Therapists were supervised by CT experts, but had less experience with CT than in previous CT process-outcome studies (DeRubeis & Feeley, 1990; Feeley et al., 1999; Strunk et al., 2010). Also, all of the patients received anti-depressant medication (ADM). Overall, the Behavioral Methods/Homework factor was predictive of subsequent symptom change, however Cognitive Methods and Negotiating/Structuring activities were not, which are discrepant with the results found by Strunk et al. (2010). Although the authors highlighted the inclusion of ADM as a possible explanation for this discrepancy, therapist inexperience with CT was also mentioned as a possible explanation. It may be that the mechanisms of change in CT differ when more versus less expert therapists provide the treatment. In addition, studies have shown differences in the efficacy of CT across study sites, which has led several investigators to raise questions about whether CT has been implemented consistently across sites and studies (Elkin et al., 1989; DeRubeis et al., 2005).

For example, DeRubeis et al. (2005) found a significant site by treatment interaction in a comparison of patient remission rates, in which clients receiving CT from experienced therapists at the University of Pennsylvania (Penn) experienced results at least equal to those receiving pharmacotherapy, while patients receiving CT from therapists with lesser experience at Vanderbilt experienced inferior results (at the level of a non-significant trend) to those receiving pharmacotherapy at that site. One argument can be made that these differential outcomes are a result of differing medication delivery procedures between the two sites of the pharmacotherapy conditions. However, ignoring the pharmacotherapy conditions, the average remission rates of CT at Penn (CT expert therapists) were larger than those at Vanderbilt (lesser-experienced therapists; 50% and 30%, respectively). Although differences in patient characteristics may have

played a role in the differential outcome of CT across sites, the authors note that the differing levels of therapist expertise were a likely cause.

Although varying levels of therapist expertise in CT remains a plausible explanation for the differential treatment outcomes in the above studies, this hypothesis was not directly tested. In order to test this hypothesis, it is important to identify the component of CT that is not only central for competent delivery of CT, but is also known to be difficult for novice therapists to master and correctly implement. One such component of CT is the Socratic method.

Socratic Method

One important effort to detail the competencies needed to properly administer CT stemmed from the Improving Access to Psychological Therapies Programme (IAPT) in association with the Department of Health in England (2007). According to the report, competent implementation of the cognitive methods within CT requires the use of guided discovery, in which the therapist utilizes the Socratic method to guide the client through a process of self-discovery. As mentioned previously, the Socratic method uses a series of graded questions to highlight the importance of a client's negative automatic thought patterns, allowing the therapist and client to work through them in a collaborative manner, while examining the validity of these thoughts and their relationship between with the client's emotions and behavior to achieve cognitive change (Beck, 1979; Overholser, 1993a; 1993b).

Although the Socratic method is thought to underlie the process of cognitive change, it is a widely held belief that it is one of the more difficult techniques for novice therapists to master in CT (Beck, 1979; IAPT, 2007; Overholser, 1991). This suggests that the behavioral and cognitive methods within cognitive therapy may require varying levels of expertise to be effectively implemented, with the cognitive methods being more difficult. Therefore, it is

plausible that therapist adherence to the cognitive methods are differentially related to outcome depending on the therapist's level of expertise. In other words, an expert therapist's efforts to adhere to the cognitive methods within CT may be more related to therapeutic outcome than efforts put forth by lesser experienced therapists, which would explain the discrepant results of the aforementioned studies (Strunk et al., 2010; Strunk et al., 2011). If this is the case, it is likely that a large portion of the difference in the strength of the process-outcome relationship, for expert versus lesser-experienced therapists, stems from differences in the implementation of the Socratic method. Therefore, in examining possible predictors of the strength of the process-outcome relationship in novice therapists, it is a logical first step to measure and compare therapist adherence to the Socratic method.

Our Study

The purpose of this study is to further explore the relationship between therapist adherence to CT and symptom change in patients with Major Depressive Disorder (MDD). More specifically, this study will examine the strength of the process-outcome relationship in CT using novice therapists, and further explore therapist adherence to the Socratic method as a possible predictor of the strength of that relationship. Based on previous findings, we hypothesize that there will be a weak or non-significant relationship between novice therapist adherence to CT process variables and session-to-session symptom change. Additionally, it is hypothesized that therapist adherence to the Socratic method will emerge as a significant predictor of session-to-session symptom change. As a secondary analysis, mean differences of adherence between novice and expert therapists will be examined. In this analysis, it is expected that expert therapists will yield higher adherence scores to the therapeutic process variables of interest, especially the Socratic method, than novice therapists.

Overall, it is clear that the majority of previous process-outcome research has had several limitations (Webb et al., 2010), and that previous CT process-outcome research has yielded discrepant results (Strunk et al., 2010; Strunk et al., 2011). Our study will aim to preserve the strengths of previous CT process-outcome research, especially improvements made by Strunk et al. (2010) by using a larger sample size, attaining multiple measures of process variables, and utilizing a longitudinal repeated measures design. Our predictor variables are rated on a session-to-session basis early in treatment when the rate and degree of symptom change is the greatest (Tang & DeRubeis, 1999; Tang et al. 2005; Kelly, Roberts, & Ciesla, 2005). Also, in order to establish temporal precedence, adherence measures will be assessed in the session prior to which symptom change is predicted. In addition to previous research, our study improves upon the measured adherence items by incorporating a more recent factor analysis (Strunk et al., 2011), and also includes a Socratic method adherence scale created specifically for this study.

Method

Participants

The intent-to-treat (ITT) sample consisted of 67 adults from the Columbus area with a primary Axis I diagnosis of Major Depressive Disorder (MDD), according to DSM-IV criteria. In total, 66 participants attended at least one session, and video/audio recordings to be rated were available at the time of the project for 65 participants.

Initially, participants were assessed during a 15-20 minute phone screening on the DSM-IV criteria, and if they met the criteria, were brought in for an intake assessment to further evaluate their candidacy based on the following inclusion/exclusion criteria. Inclusion criteria included: (a) diagnosis of MDD, according to DSM-IV criteria (APA, 1994); (b) 18 years or older; and (c) able and willing to give informed consent. Exclusion criteria included: (a) history

of bipolar affective disorder or psychosis; (b) current Axis I disorder other than MDD if it constitutes the predominant aspects of the clinical presentation and if it requires treatment other than that being offered; (c) subnormal intellectual potential (IQ below 80); (d) evidence of any medical disorder or condition (including pregnancy or risk of pregnancy) that could cause depression; (e) clear indication of secondary gain (e.g., court ordered treatment or compensation issues); and (f) current suicide risk sufficient to preclude treatment on an outpatient basis. It is also important to note, that patients previously on medication were not excluded, but asked to maintain a stable dosage over the course of the study.

In our sample of CT patients (ITT), 57% were women ranging in age from 18-69 years ($M=36.25$, $SD=13.32$). The majority of the sample was Caucasian (84%), with 10% African American, 4% Asian, and 2% of Mexican, Puerto Rican, or Cuban descent. Additionally, 31% of the sample was married or co-habiting with their significant other.

In this sample, 12 randomly selected therapy videos (ranging from sessions 1-3) from the DeRubeis et al. (2005) study were rated to examine the nature of expert therapist adherence relative to that of the novice therapists. Of these 12 participants, 58% were male ranging in age from 23-61 years ($M = 42.16$, $SD = 11.09$). The majority of the sample was Caucasian (92%) with 8% African American. Additionally, 33% of the sample was married or co-habiting with their significant other.

Therapists

Therapists consisted of four advanced graduate students (1 male) trained in CT as study therapists by Daniel R. Strunk, Ph. D.

Therapists conducting CT in the twelve therapy session videos drawn from the DeRubeis et al. (2005) study consisted of four males and two females. The expert therapists in the CT

condition of this study consisted of five licensed Ph.D. psychologists and a psychiatric nurse practitioner (MSN). Both groups of therapists followed the procedures outlined in the standard text of CT for depression (Beck et al., 1979).

Procedure

Seven advanced undergraduate students rated video recordings of therapy sessions (sessions 1-3) on all process variables for each participant. Each rater attended 16 hours of training sessions before data collection, and one 2 hour “booster” training session during the 10-week rating period to prevent rater drift. Raters were trained and supervised by Dr. Daniel R. Strunk and Andrew A. Cooper, M.A.

Therapy session videotapes were randomly assigned such that raters did not see more than one therapy session per participant; in order to eliminate any rater bias that might be related to knowledge of previous sessions with the participant. Also, all therapy session videos were double rated. In cases where therapy session videos were damaged or missing, audio recordings of the sessions were rated. This was the case for 26 of the 172 sessions rated. Additionally, one patient in session 1, six in session 2, and sixteen in session 3 were missing both video and audio.

Measures

Diagnostic

The Structured Clinical Interview for the DSM-IV (SCID-I; First, Spitzer, Gibbon, & Williams, 2001) was used to assess whether potential participants met the diagnostic criteria for a diagnosis of MDD.

Depression

The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), is a 21-item self-report measure that was filled out by participants before each session to monitor session-to-session fluctuations in depressive symptom severity, and is the dependent variable in this study. The BDI-II has been positively correlated with the Hamilton Depression Rating Scale ($r = .71$).

Therapist Adherence

As previously mentioned, a factor analysis revealed three subscales that comprise the measure of overall therapist adherence to CT, including: Cognitive Methods, Negotiating/Structuring, and Behavioral Methods/Homework, which will serve as independent variables in this study (Strunk et al., 2011). The CSPRS items (Hollon et al., 1988) were used to assess these three factors of therapist adherence. The 9-item Cognitive Methods subscale measures therapist efforts to help the participant identify and adjust thoughts to more accurately represent reality. The 8-item Negotiating/Structuring subscale measures therapist efforts to collaboratively structure and negotiate therapy content with the participant. The 5-item Behavioral Methods/Homework subscale measures therapist efforts to implement behavioral strategies and homework into therapy.

Socratic Questioning

The Socratic questioning scale, created for this study, consists of 8 Likert-style questions on a 7 point-scale, where lower scores represent lower therapist adherence. The scale was designed to capture therapist adherence on the four therapeutic process variables of the Socratic method, including: systematic questioning, inductive reasoning, universal definitions, disavowal of knowledge (Overholser, 1991; 1993a; 1993b; 1994; 1995). However, the inductive reasoning and universal definition items were later removed due to poor inter-rater reliability. In the scale,

systematic questioning refers to a process in which the therapist uses a graded series of questions to lead the client through a collaborative effort to problem solving, designed to facilitate client autonomy (Overholser, 1993a). Disavowal of knowledge is a process in which the therapist encourages the client to view their beliefs and opinions about the world as subjective, rather than objective facts (1995). In this process, the client is encouraged to be skeptical about their “inadequately justified beliefs” by searching for new knowledge, evidence, or alternative explanations in order to better understand the basis for their beliefs and enact cognitive change (1995). For the purposes of this study, the measurement of these two process variables (systematic questioning and disavowal of knowledge) will be operationally defined as Socratic Questioning. In addition to assessing overall Socratic Questioning, the scale was designed measure a subset of Socratic Questioning, operationally defined as General Questioning, which reflects the degree to which the therapist asks open-ended questions to facilitate client autonomy.

Results

Before conducting parametric statistical tests, it is important to examine the distributions for each variable of interest. The distribution of each variable was examined. Skewness and kurtosis were within the acceptable range for the three dimensions of therapist adherence to CT (e.g., Cognitive Methods, Negotiating/Structuring Activities, and Behavioral Methods/Homework), and the two dimensions of the Socratic method (e.g., Socratic Questioning and General Questioning). However, the Therapeutic Alliance factor distribution was leptokurtic, or more peaked than the normal distribution, and required transformation before running parametric statistical tests ($\alpha_4 = 13.8436062$). In order to transform this distribution, the cubed scores for the Therapeutic Alliance were calculated and used during analysis. Additionally, the

skewness and kurtosis of the dependent variable's distribution, measured by the BDI-II, were within the acceptable range and did not require transformation.

Inter-rater Reliability

Additionally, random effects intraclass correlation coefficients (ICCs) were calculated to evaluate the inter-rater reliability of adherence scores for CT and the Socratic method, and the Therapeutic Alliance (McGraw & Wong, 1996). These ICC estimates were adjusted for the number of raters (two raters per session), which yielded coefficients of .68 for Cognitive Methods, .45 for Negotiating/Structuring, .71 for Behavioral Methods/Homework, .67 for Socratic Questioning, .50 for General Questioning, and .56 for Therapeutic Alliance. The ICC estimates for the adherence to Cognitive Methods, Behavioral Methods/Homework, and Socratic Questioning yielded moderate to strong correlation coefficients. However, the ICC estimates for Negotiating/Structuring, General Questioning, and the Therapeutic Alliance yielded slightly weaker correlation coefficients. It is important to note that non-significant effects with these lower ICCs should be interpreted with caution, as the lower reliability makes it more difficult to detect a true effect of interest.

Differences in Adherence: Novice and Expert Therapists

A *t*-test of the differences between novice and expert therapists on the means of adherence (averaged across sessions 1-3) was conducted (see Table 1). Surprisingly, novice and expert therapists did not differ significantly in adherence to Cognitive Methods, Negotiating/Structuring, Behavioral Methods/Homework, and Socratic Questioning. However, expert therapist adherence to General Questioning was significantly greater than novice therapist adherence.

Session-to-Session Analyses

A repeated measures regression analysis was conducted to examine the predictors of session-to-session symptom change measured by the BDI-II using SAS Proc Mixed (see Table 3). In this analysis, adherence scores for each session (sessions 1-3) were entered as the independent variable, and the BDI-II scores measured in each subsequent session were entered as the dependent variable (i.e., an adherence score measured at session 1 was the independent variable for BDI-II scores measured during session 2, and an adherence scores measured during session 2 was the independent variable for BDI-II scores measured at session 3). In order to account for previous symptom severity, the current session's BDI-II score was entered as a covariate (i.e., BDI-II score at session 1 was entered as a covariate when predicting the BDI-II score at session 2, and the BDI-II score at session 2 was entered as a covariate when predicting BDI-II score at session 3, etc). This procedure uses repeated measures of therapist adherence and symptom severity to examine the relationship between adherence scores across each session and the BDI scores collected in the subsequent session, while accounting for symptom severity at the current session. Additionally, the model was conducted with and without an ADM related covariate (a dichotomous variable indicating whether a client was or was not on antidepressant medication). Although the presence or absence of this covariate did not greatly affect significance levels, it was kept in the model to account for any variance related to whether or not a patient was on ADM. For these analyses, a significant negative *t*-score represents a negative relationship between therapist adherence and subsequent symptom change (higher adherence is related to a reduction in symptom severity).

Overall, adherence to General Questioning emerged as the only significant predictor of session-to-session symptom change, while Socratic Questioning was predictive at a trend level

(higher adherence in both relates to a reduction in symptom severity). However, adherence to Cognitive Methods, Negotiating/Structuring, Behavioral Methods/Homework, and the Therapeutic Alliance were not significant predictors of session-to-session symptom change.

Additionally, a multiple predictor model using SAS Proc Mixed was calculated to examine the predictors of session-to-session symptom change with all of the adherence factors in the model simultaneously (Cognitive Methods, Negotiating/Structuring, and Behavioral Methods/Homework, Socratic Questioning, and General Questioning). However, none of the adherence factors emerged as significant predictors of session-to-session symptom change in this model. Another multiple predictor model including only the CT process variables of adherence (Cognitive Methods, Negotiating/Structuring, and Behavioral Methods/Homework) was conducted; however, none of these variables emerged as significant predictors.

Discussion

The primary purpose of this study was to examine the process-outcome relationship of novice therapists administering CT to participants with a primary diagnosis of MDD. In order to examine this relationship, ratings were collected on the three dimensions of therapist adherence to CT (e.g., Cognitive Methods, Negotiating/Structuring Activities, and Behavioral Methods/Homework), which were identified using an exploratory factor analysis in a previous study (Strunk et al., 2011). The process-outcome relationship was examined further by measuring two dimensions of therapist adherence to the Socratic method in CT (e.g., Socratic Questioning and General Questioning). The purpose of including these factors was to examine the Socratic method as a predictor of symptom change in CT and explore differences in the implementation of the Socratic method as a possible explanation for the discrepancies observed in previous CT process-outcome research.

Overall, the results indicate that adherence to the General Questioning portion of the Socratic method was the only significant predictor of symptom change among novice therapists administering CT. Additionally, novice therapists appeared to ask less open-ended questions to facilitate client autonomy than expert therapists when implementing the Socratic method. Thus, while the Socratic method was predictive of subsequent symptom change (Socratic Questioning portion only at a trend level), only General Questioning (not Socratic Questioning) differentiated expert and novice therapists. Nonetheless, while not significant, the expert and novice therapist difference on Socratic Questioning was large (and would be of interest if significant in a larger sample). These results suggest the importance of the Socratic method in our efforts to develop a more precise definition of therapist expertise in CT, and further supports the conclusion drawn by the IAPT that the Socratic method is important to the competent delivery of CT (2007).

Additionally, these results suggest that the Socratic method is an aspect that discriminates between novice and expert therapists in the implementation of CT, and may explain the discrepancies observed in previous CT process-outcome research. As mentioned previously, adherence to the Cognitive Methods in CT emerged as the strongest predictor of symptom change in a sample of expert therapists (Strunk et al., 2010), but was not significantly predictive in a sample of new therapists recently trained in CT (Strunk et al., 2011). One possible account of this pattern of findings is that the therapists in the expert sample may be implementing the Cognitive Methods socratically, which facilitates symptom change, while the therapists with lesser expertise are not. While our data do not directly test this idea, it is an interesting possibility that future research might further examine.

Limitations

It is important to note that there are several limitations to this study. First, this study was a naturalistic observational design, in which there was no experimental manipulation of the process variables, and therefore can only establish correlational relationships. However, procedures were put in place to establish temporal precedence of the adherence occurring before the symptom change, which is a necessary condition to establish if a true causal relationship does indeed exist (Feeley et al., 1999). In addition, in naturalistic studies, there is concern about the effects of third variable confounds, such as events occurring outside of therapy, which could drive the relationships observed between variables.

Second, while the theory underlying CT suggests that cognitive change in the client is driving symptom change, the current study focused only on the actions of the therapist and how they relate to outcome. With only these factors being measured, it is possible that either cognitive or other client changes are the mechanism by which therapist behaviors lead to symptom change. Only by measuring these client variables could this issue be further disentangled.

Third, the expert and novice therapist conditions each used different participant samples that were not matched on individual patient characteristics (e.g., comorbidity, # of recurrent depressive episodes, etc.). Thus, differences observed in these samples may reflect either therapists' efforts to adapt treatment on the basis of patient characteristics or differences in the implementation of the therapy provided by these therapists irrespective of patient differences. While we tend toward the latter explanation, only a trial in which patients were randomly assigned to expert or novice therapists could fully address this issue.

Fourth, the adherence rating measure only captures whether or not the therapist engaged in a particular therapeutic action, and does not account for whether the therapeutic actions were competently delivered. A rating of competency, such as the Cognitive Therapy Scale (CTS; Young & Beck, 1998), in addition to adherence may provide better insight into the nature of the process-outcome relationships across different samples of therapists. However, inter-rater reliability estimates using the CTS have varied from low to high across samples (Vallis, Shaw, & Dobson, 1986; Jacobson & Gortner, 2000), where even expert raters yielded low agreement ($ICC = .1$; 2000). Therefore, it is important to be cautious when interpreting such results, and also report the observed ICC estimates when using the CTS in process-outcome studies. Additionally, the CTS is comprised of abstract questions to measure competency, and therefore even if an acceptable reliability is observed, it is difficult to identify the specific therapist behavior driving such ratings. Therefore, one possibility the current study raises is whether adherence to the Socratic method may be a behavior that leads to higher scores on the CTS, and that the improved measurement of the Socratic method may serve to enhance the precision of competency measures.

Finally, we only included a small number of therapy sessions from experts. Therefore, this small number of expert therapy sessions reduced our power to detect differences between the expert and novice samples. Thus, a larger sample may reveal important differences between the adherence of expert and novice therapists of which the present study was not adequately powered to detect.

Future Directions

Future research examining the differences in the CT process-outcome relationship between expert and novice therapists should build upon the current study by taking several

methodological considerations into account. Future studies should include both novice and expert therapist conditions working within the same sample of randomly assigned participants in order to make a direct comparison of the strength of the process-outcome relationships, and the differences in adherence. Also, a measure of therapist competency, such as the CTS, should be included to examine whether competency is driving a portion of the differential therapeutic outcomes across therapists. Finally, if possible, expert raters should be used to rate adherence and competency to ensure that therapist actions are not under or overestimated.

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Table 1

Means and Standard Deviations of Adherence Scales, and Differences between Means t-test.

CSPRS Adherence Process Variables	Novice Mean (SD)	Expert Mean (SD)	t-value	d-type Effect Size
Cognitive Methods	0.91(.46)	0.92 (.52)	0.06	0.01
Negotiating/Structuring	1.70 (.27)	2.02 (.63)	1.73	1.01
Behavioral Methods/HW	1.46 (.43)	1.53 (.97)	0.23	0.13
Socratic Adherence Process Variables				
General Questioning	2.21 (.75)	2.92 (.80)	2.94**	0.68
Socratic Questioning	2.12 (.72)	2.41 (.88)	1.22	0.28

Note. ** $p < .01$.

Table 2

Correlations Among Adherence Factors and Concurrent BDI-II Scores across Sessions 1 through 3

Adherence Factors	Cognitive Methods	Negotiating/ Structuring	Behavioral Methods/HW	Socratic Questioning	General Questioning	Working Alliance Inventory	BDI
Cognitive Methods	1.00	-	-	-	-	-	-
Negotiating /Structuring	0.29 ^(2/3)	1.00	-	-	-	-	-
Behavioral Methods/HW	-0.11 ^(1/3)	0.25 ^(2/3)	1.00	-	-	-	-
Socratic Questioning	0.84 ^(3/3)	0.35 ^(3/3)	-0.01 ^(1/3)	1.00	-	-	-
General Questioning	0.61 ^(3/3)	0.44 ^(3/3)	0.08 ^(1/3)	0.78 ^(3/3)	1.00	-	-
Therapist Alliance	0.13 ^(0/3)	0.21 ^(1/3)	0.07 ^(0/3)	0.45 ^(0/3)	0.22 ^(1/3)	1.00	-
BDI	0.08 ^(0/3)	-0.06 ^(0/3)	0.03 ^(0/3)	0.09 ^(1/3)	0.04 ^(0/3)	0.08 ^(0/3)	1.00

Note: Reported correlations are the average of the correlations at each of the first three sessions.

Significance tests were calculated at each session. The fractions in superscript represent the number of the first three sessions at which that correlation was significant ($p < .05$).

Table 3
Analysis of Predictors of Session-to-Session Symptom Change

CSPRS Adherence Process Variables	df	t-value	r-type Effect Size
Cognitive Methods	149	-1.56	-.13
Negotiating/Structuring	149	-1.35	-.11
Behavioral Methods/HW	149	-.03	-.00
<i>Socratic Adherence Process Variables</i>			
General Questioning	149	-2.07*	-.17
Socratic Questioning	149	-1.77†	-.14

Note: r values represent the relationship between adherence scores at session n and the severity of depression at session n + 1. All observed effect sizes were negative, indicating that higher adherence was related to a reduction in symptom severity. All analyses include BDI-II and ADM as covariates.

* $p < .05$. † $p = .08$.